

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in this application. Added text is indicated by underlining, and deleted text is indicated by ~~striketrough~~. Changes are identified by a vertical bar in the margin.

**Listing of Claims:**

- 1                   1.       (currently amended): A storage device comprising:  
2                   a control unit;  
3                   a cache memory; and  
4                   a disk device;  
5                   wherein said control unit records ~~a data readout location in the disk device as~~  
6                   access history information that identifies a data access pattern and a history of data readout  
7                   activity having been performed for the disk device by ~~for~~ each computer among a plurality of  
8                   computers connected to said storage device, respectively reading out data from said storage  
9                   device to specify one of said computers based on predetermined information including both a  
10                  first information for specifying the access history and a second information indicating the  
11                  specified computer, and then ~~pre-reads~~ data to be used by said one of said computers from said  
12                  disk device to said cache memory based on a command containing information for specifying  
13                  said history and information for specifying said one of said computers, the command being  
14                  received from a management computer communicating with the storage device;  
15                  determines data to be pre-read ~~said pre-read data being determined~~ in accordance  
16                  with said data access pattern and said history of data readout activity of said one of said  
17                  computers; and  
18                  wherein the control unit records said history into a predetermined unit for  
19                  controlling the cache memory, as being linked with said information for specifying said history  
20                  and said information for specifying said computer, and reads data from said disk device to said  
21                  cache memory, based on said history linked with said information for specifying said computer  
22                  and said information for specifying said history contained in said command in response to  
23                  receiving said command from the management computer.

1                   2.       (canceled).

1                   3.       (currently amended) A storage device according to claim 2 1, wherein  
2 said predetermined information includes information on time, and said control unit records said  
3 history as being linked with information for specifying said history and information for  
4 specifying said computer until a predetermined time.

1                   4.       (Original) A storage device according to claim 3, wherein said  
2 predetermined information includes information for specifying a data storage location of said  
3 disk device, and said control unit records said history as being linked with said information for  
4 specifying said history and said information for specifying said computer from a time when said  
5 computer specified by said information for specifying said computer reads out data stored at a  
6 data storage location of said specified disk device.

1                   5.       (Original) A storage device according to claim 4, wherein when a  
2 command of stopping record of said history is received, the record of said history is stopped.

1                   6.       (canceled)

1                   7.       (Original) A storage device according to claim 4, wherein an operating  
2 system program to be used by said specified computer is stored in a location specified by the  
3 information for specifying the data storage location of said disk device.

1                   8.       (currently amended) A storage device according to claim 6 5, wherein an  
2 operating system program to be used by said specified computer is stored in a location specified  
3 by the information for specifying the data storage location of said disk device.

1                   9.       (Original) A storage device according to claim 1, wherein the history is  
2 arranged to be recorded in a form of a table specifying a relationship among a history ID, the  
3 data readout location and the computer using the data having been stored in the location.

1                   10.     (currently amended) A system including a storage device having a disk  
2 device and a cache memory, a management computer, and a plurality of computers connected to  
3 said storage device, comprising:

4                   said management computer for transmitting to said storage device a first  
5 command containing information for specifying any one of said computers and information for  
6 specifying access history information that identifies a data access pattern and a history of data  
7 readout activity for said specified computer and storage device;

8                   said storage device for, when a computer specified by said first command reads  
9 out data from said storage device, reading a storage location of said data in said disk device as a  
10 history that is linked with information for specifying said access history information ~~of data~~  
11 ~~readout activity~~ and information about said computer to be specified contained in said first  
12 command;

13                   said management computer for transmitting to said storage device a second  
14 command containing information for specifying any one of said plurality of computers and  
15 information for specifying said access history information ~~of data readout activity;~~ and

16                   said storage device for reading out data specified by said access history  
17 information ~~of data readout activity~~ from said disk device to said cache memory, based on said  
18 second command received from said management computer, said pre-read data being determined  
19 in accordance with said access history ~~of data readout activity~~ information of said computer.

1                   11.     (Previously presented) A system according to claim 10, wherein said  
2 management computer includes information about a schedule of a designation to be transmitted  
3 to said storage device by said computer itself, and said management computer transmits said first  
4 command or second command to said storage device based on said schedule.

1                   12.     (Original) A system according to claim 10, wherein said management  
2 computer designates said specified computer to start said specified computer itself after said  
3 second command is transmitted to said storage device.

1                   13.     (Currently amended) A read-ahead method to be executed in a storage  
2 device, comprising the steps of:  
3                   transmitting to said storage device a first command containing information for  
4 specifying a first computer from among a plurality of computers connected to said storage device  
5 and access history information that identifies a data access pattern and a history of readout  
6 activity having been performed for the storage device by ~~of~~ said first computer to be used to  
7 perform said read-ahead;  
8                   in said storage device,  
9                   recording a location where data associated with said first command is to  
10 be stored ~~as a history~~ and linked with information for specifying said access history information  
11 and information for specifying said first computer when said first computer reads out said data  
12 from said storage device; and  
13                   transmitting a second command containing information for specifying said  
14 ~~first~~ computer and information for specifying said access history information to said storage  
15 device;  
16                   in said storage device,  
17                   pre-reading data from a recording medium included in said storage device  
18 based on said recorded access history information corresponding with said information for  
19 specifying said first computer and said information for specifying said history contained in said  
20 second command.

1                   14.     (Previously presented) A read-ahead method according to claim 13,  
2 further comprising the steps of:  
3                   transmitting information about time to said storage device; and  
4                   recording said history until the time specified by said information about time in  
5 said storage device.

1                   15.     (Previously presented) A read-ahead method according to claim 13,  
2 further comprising the step of:

3                    recording said history from a time specified by said information about  
4 time in said storage device, based on said information about time.

1                    16.     (Original) A system according to claim 10, wherein said management  
2 computer classifies said plurality of computers into a plurality of groups when registering said  
3 computers.

1                    17.     (Currently amended) A storage system comprising:  
2 a plurality of computers; and  
3 a storage device in data communication with each of said computers, said storage  
4 device comprising:

5                    a plurality of disk drive units;  
6                    a cache memory for storing portions of data stored on said disk drive units  
7 that are read out from said disk drive units; and  
8                    a control unit for controlling reading out of data stored on said disk drive  
9 units,

10                   said control unit configured to:

11                   obtain storage-device-access history information that identifies an access  
12 pattern and a history of data readout activity for each of said computers;

13                   store information in tabular form which identifies each of said computers  
14 with its respective storage-device-access history information; and

15                   pre-read data from said disk drive units for at least one of said computers  
16 based on its respective storage-device-access history information.

1                    18.     (new) The storage device according to claim 1, wherein the second  
2 information comprises a MAC (Media Access Control) address.

1                    19.     (new) The storage device according to claim 1, wherein the command  
2 comprises a PointRead-command for instructing the storage device to start a pre-read operation

3 to be performed by the control unit in response to a predetermined condition having been defined  
4 in advance for starting the pre-read operation.

1                   20.     (new) A storage device comprising:

2                   a control unit;

3                   a cache memory; and

4                   a disk device;

5                   wherein said control unit:

6                         records access history information that identifies a data access pattern and  
7                   a history of data readout activity having been performed for the disk device by each  
8                   computer among a plurality of computers connected to said storage device, respectively  
9                   reading out data from said storage device to specify one of said computers based on  
10                  predetermined information including both a first information for specifying the access  
11                  history information and a second information having a MAC (Media Access Control)  
12                  address for specifying the computer,

13                        pre-reads data to be used by said one of said computers from said disk  
14                  device to said cache memory based on a command containing information for specifying  
15                  said access history information and information for specifying the one of the computers,  
16                  the command being sent from a management computer communicating with the storage  
17                  device and being a PointRead-command for instructing the storage device to start a pre-  
18                  read operation to be performed by the control unit in response to a predetermined  
19                  condition having been defined in advance for starting the pre-read operation, and

20                        determines data to be pre-read in accordance with said access history  
21                  information of data readout activity of said one of said computer; and

22                  wherein the control unit further:

23                        records said access history information into a predetermined unit for  
24                  controlling the cache memory, as being linked with said information for specifying said  
25                  history of data readout activity and said information for specifying said computer, and

reads data from said disk device to said cache memory based on said access history information linked with said information for specifying said computer and said information for specifying said history of data readout activity contained in said command in response to receiving said command from the management computer.

21. (new) A storage system comprising:

a storage device including:

a control unit;

a cache memory; and

a disk device;

a plurality of computers respectively connected to the storage device through a network for performing any program having been stored in the storage device;

a management computer connected to the storage device through the network for sending one of a plurality of commands to the storage device;

wherein the control unit is provided within the storage device such that the control unit:

records access history information that identifies a data access pattern and a history of data readout activity having been performed for the disk device by each computer among the a plurality of computers respectively reading out data from the storage device to specify one of the computers based on predetermined information including both a first information for specifying the access history information and a second information having a MAC (Media Access Control) address for specifying the computer;

pre-reads data to be used by the one of the computers from the disk device to the cache memory based on a command containing information for specifying the access history information and information for specifying the one of the computers, the command being sent from the management computer and being a PointRead-command for instructing the storage device to start a pre-read operation to be performed by the

24 control unit in response to a predetermined condition having been defined in advance for  
25 starting the pre-read operation;  
26 determines data to be pre-read in accordance with the history of data  
27 readout activity of the one of the computers;  
28 and wherein the control unit(102):  
29 records the access history information into a predetermined unit for  
30 controlling the cache memory, as being linked with the information for specifying the  
31 history of data readout activity and the information for specifying the computer; and  
32 reads data from the disk device to the cache memory based on the access  
33 history information linked with the information for specifying the computer and the  
34 information for specifying the history of data readout activity contained in the command  
35 in response to receiving said command from the management computer.